GRIFFIN INTERNATIONAL INC

August 25, 1994

Ms. Lynda Wedderspoon
State of Vermont
Department of Environmental Conservation
HMMD
103 South Main St.
Waterbury, VT 05671-0404

RE: Craftsbury Garage Site Assessment, VTDEC Site # 94-1649

Dear Ms. Wedderspoon:

Enclosed is the initial Expressway Site Investigation Report for the above mentioned project. This report has been prepared by Griffin International, Inc. (Griffin), in response to subsurface petroleum contamination detected during a routine tank replacement at this site on July 11, 1994. Please review the report and call me with any comments or questions.

Sincerely,

Peter Hack
Engineer

c: Paul Hodgdon, Craftsbury Garage

SITE ASSESSMENT REPORT

For The

CRAFTSBURY GARAGE
CRAFTSBURY, VERMONT

VTDEC SITE # 94-1649

AUGUST 1994

Prepared for:

Craftsbury Garage
Main Street
Craftsbury, VT 05826

Prepared By:

Griffin International Inc.
P.O. Box 943
Williston, Vermont 05495
(802) 865-4288

TABLE OF CONTENTS

I. INTRODUCTION

This report details Griffin's initial Expressway Site Investigation, performed after a routine tank pull inspection at the Craftsbury Garage. A 1000 gallon diesel UST and a 2000 gallon gasoline UST were removed on this date. The facility number is 1615 and the VTDEC Site number is 94-1649. During the tank removal on July 11, 1994, volatile organic compounds (VOCs) were detected in soils surrounding the tanks and piping, with average concentrations of 25 parts per million (ppm), and a peak of 100 ppm. Groundwater was encountered at approximately 12 feet below grade. However, because several water supply wells are also located in the vicinity, the Vermont Department of Environmental Conservation (VTDEC) was notified and it was determined that an expressway investigation should be initiated, starting with sampling of the monitoring wells and the on-site supply well.

II. SITE DESCRIPTION

The site is located in the center of Craftsbury village, surrounded by other businesses and residences. Another gasoline retail operation, Hoogie's Village Store, is located across the street. This store had its USTs replaced in 1992 and no contamination was detected at that time.

The Craftsbury Garage has been an auto repair shop and gas retail station for at least twenty years. Paul Hodgdon bought the property about six years ago and is the current owner and operator of an auto service and repair facility. Cars being serviced at Craftsbury Garage are stored behind the building, and the ground surface appeared to be heavily stained by oil. The water supply for the garage is a dug well also located behind the building. This water is used for washing only. Other supply wells in the area are drilled wells, and assumed to be down to bedrock.

Three groundwater monitoring wells (MW1, MW2, MW3) were installed under the direction of the VTDEC, when the property was purchased by the current owner. These wells surround the former and present USTs, and were most likely installed as leak detection for the former USTs. MW4 was installed in the tank pit during the tank replacement.

The geologic maps of the area indicate littoral pebbly sand overburden deposits overlying limestone bedrock. The material encountered during the tank pull was sand and silt with large boulders, and miscellaneous debris. It was reported that a former structure at the site had burned and the rubble was bulldozed into the basement. This condition was verified during the tank pull.

III. WATER SAMPLING AND ANALYSIS

On August 4, 1994, Griffin visited the site to collect groundwater samples from the Craftsbury Garage's dug supply well, located directly behind the garage, and four on-site monitoring wells, MW1, MW2, MW3, and MW4. Griffin also surveyed the site to prepare a site map and

groundwater contour map, and to identify potential sensitive receptors. These maps are included in Appendix A.

During the sample collection, no odors or sheens were detected in the groundwater samples. The water samples were analyzed by EPA Method 602, which tests for benzene, toluene, ethylbenzene, xylene (BTEX), and methyl tertiary butyl ether (MTBE). The depth to watertable was also measured to determine the groundwater flow direction and gradient. The watertable elevation was measured at approximately seven feet below grade. Groundwater at this site flows south-southeast at a hydraulic gradient of approximately 2%, as shown on the Groundwater Contour Map in Appendix A. Potential sensitive receptors identified during the site survey include the storm drainage system, and several drilled supply wells.

The EPA Method 602 analysis of groundwater samples collected from MW3, located upgradient of the site, did not detect any BTEX or MTBE. Only low concentrations of some BTEX compounds were detected in the samples collected from MW1 and MW4, located downgradient of the former USTs and in the tank pit, respectively. The sample from MW2, also located downgradient, contained very low concentrations of BTEX and MTBE. However, the benzene concentration in MW2 was 6.6 ppb, which is slightly above the Vermont Groundwater Enforcement Standard (VTGES) of 5 ppb for this compound. The sample collected from the supply well for the garage did not contain any BTEX, but did contain 123 ppb of MTBE, above the VTGES of 40 ppb for this compound. The analytical results from the trip blank, equipment blank and duplicate indicate that proper quality control was maintained during collection, transportation, and analysis of the samples. The laboratory results are attached.

IV. CONCLUSIONS

Low levels of residual subsurface contamination have been detected in soil and groundwater at the site, indicating that there was a release or releases of petroleum products to the subsurface that most likely originated from the former UST piping, or product handling. The USTs and piping were removed and replaced in July, 1994.

The shallow supply well for the garage has been impacted with MTBE concentrations above the VTGES, which most likely originated from a separate spill or leak from cars being repaired or stored at this facility. MTBE is a component of gasoline and is not found in other petroleum products.

Based on the distance to the identified potential receptors, site topography, the groundwater flow direction, and the relatively low level of contamination concentrations detected in the groundwater monitoring wells, Griffin does not believe that the contamination poses an immediate or serious threat to human health and safety or to the environment. Assuming all sources have been removed, the residual contamination will degrade over time by the natural processes of biodegradation, dispersion and volatilization.

V. RECOMMENDATIONS

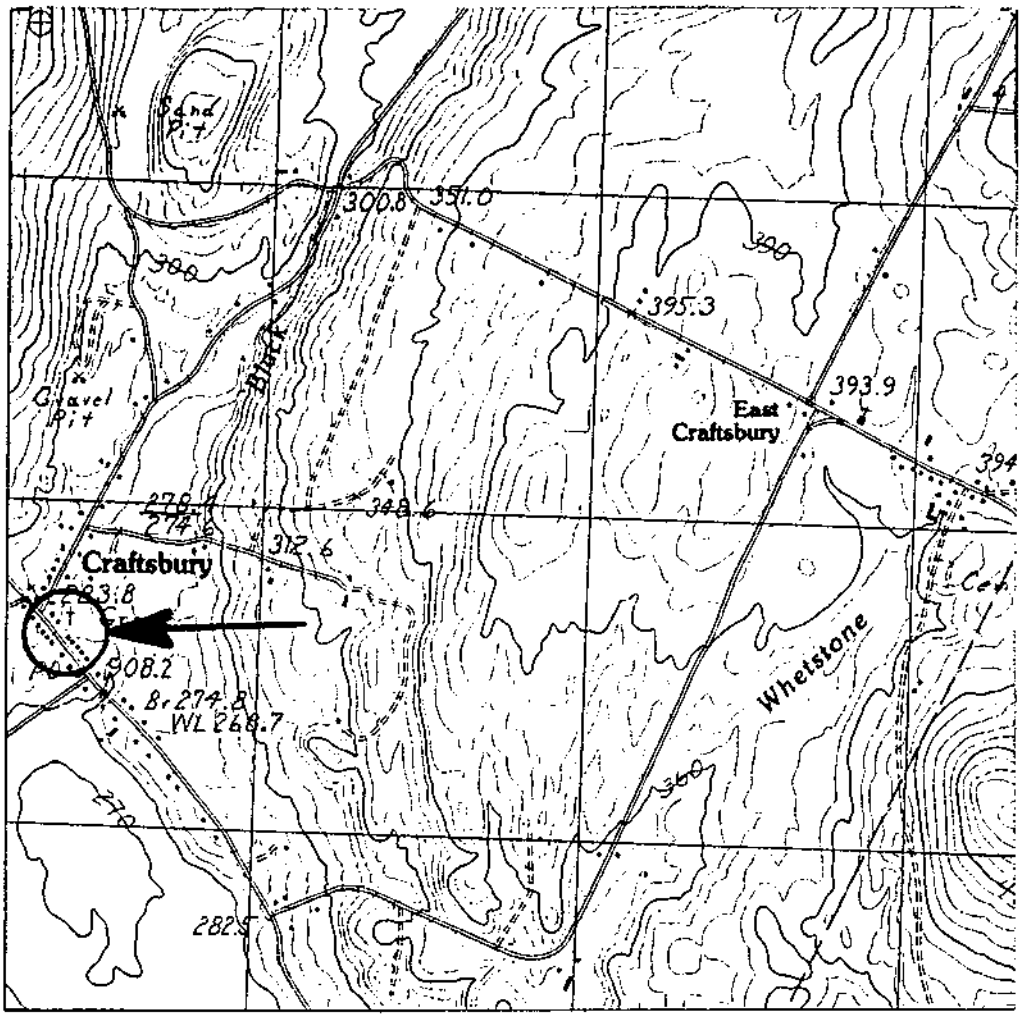
Although the water supply to the garage is not presently used for drinking, Griffin recommends that the supply well not be used for human consumption until the MTBE concentrations have decreased to near or below the VTGES. Therefore, Griffin recommends one additional round of sampling of the same monitoring wells and supply well to monitor the expected decline in groundwater contamination levels. This work should be performed in the spring of 1995.

The owner should also take precautions when dispensing fuel and performing repairs to reduce the potential of future leaks or spills at the site, particularly near the supply well.

Griffin recommends site closure after a decline of groundwater contamination concentrations has been established.

APPENDIX A

Site Location Map
Site Map
Groundwater Contour Map



JOB #: 6944541
SOURCE: USGS- CRAFTSBURY, VERMONT QUADRANGLE

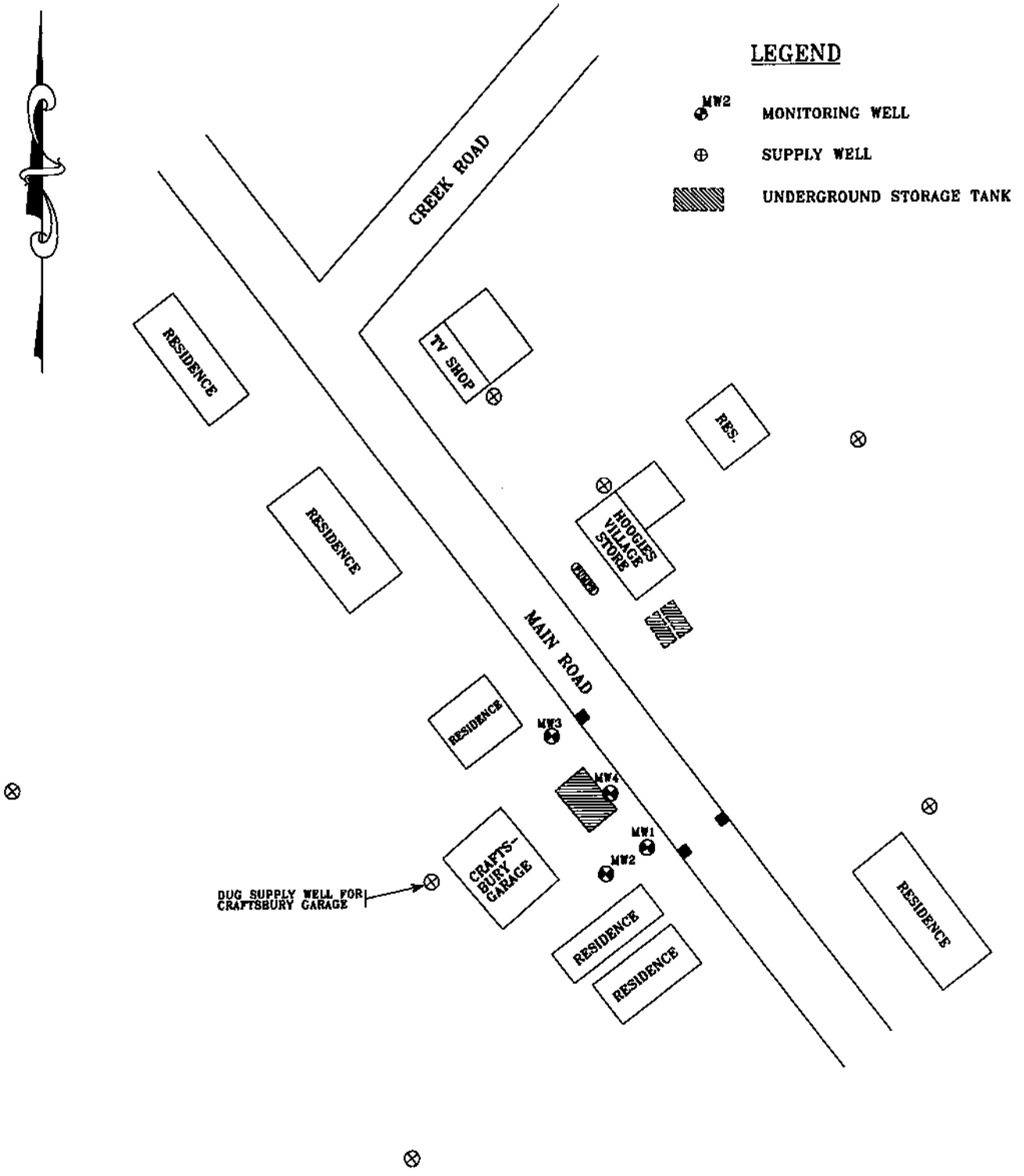
GRIFFIN INTERNATIONAL Inc

CRAFTSBURY GARAGE

CRAFTSBURY, VERMONT

SITE LOCATION MAP

DATE: 7/21/94	DWG.#:1	SCALE: 1:24000	DRN.: SB	APP.:PH



JOB #: 6944541

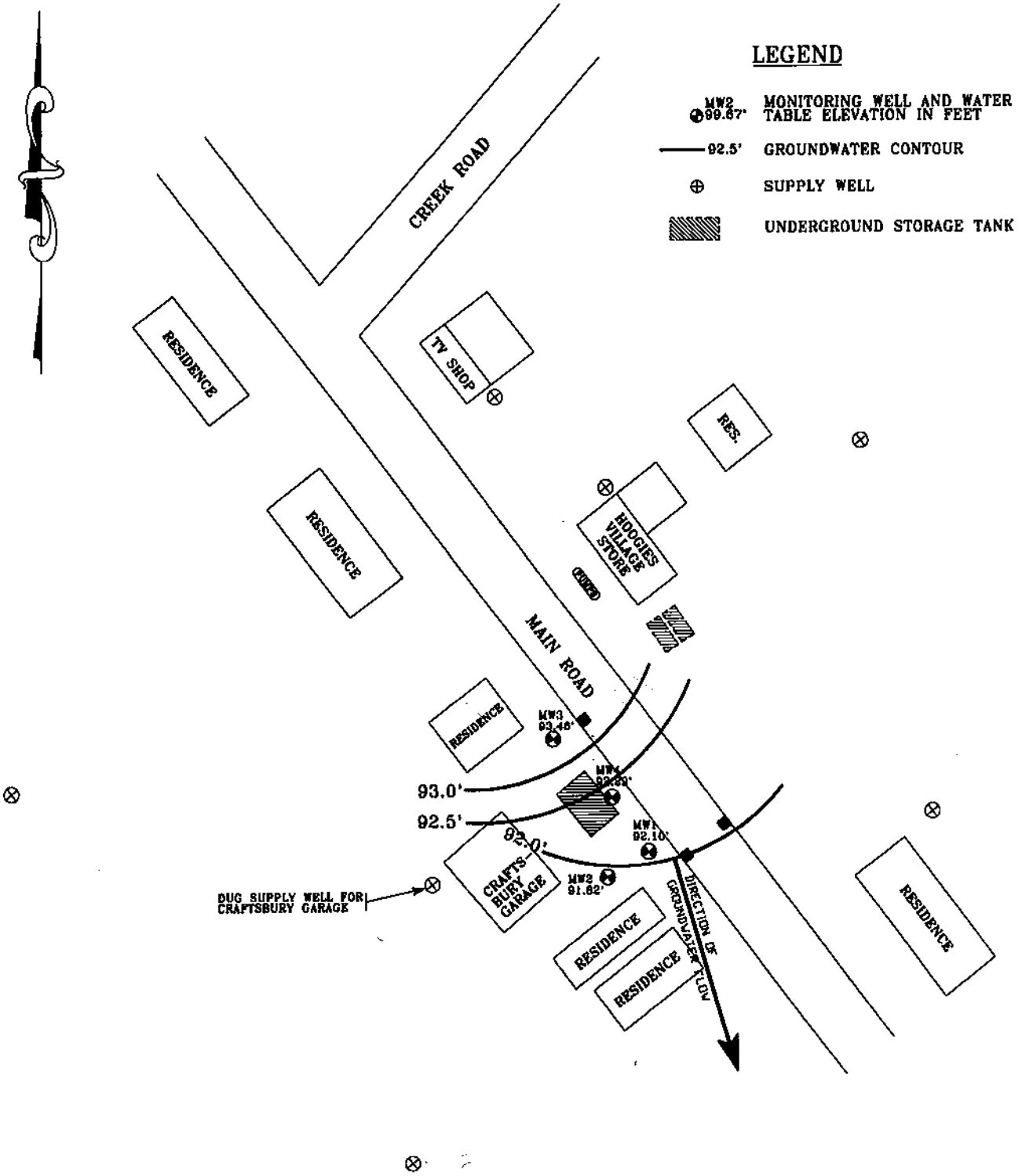
GRIFFIN INTERNATIONAL INC

CRAFTSBURY GARAGE

CRAFTSBURY, VERMONT

SITE MAP

DATE: 8/5/94	DWG.#: 2	SCALE: 1"=60'	DRN.: SB	APP.: PH



JOB #: 6944541
MEASUREMENT DATE: 8/4/94

GRIFFIN INTERNATIONAL INC

CRAFTSBURY GARAGE

CRAFTSBURY, VERMONT

GROUNDWATER CONTOUR MAP

DATE: 8/5/94	DWG.#: 2	SCALE: 1"=60'	DRN.: SB	APP.:PH

APPENDIX B

Analytical Laboratory Results

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994

PROJECT CODE: GICG1233
REF.#: 62,772 - 62,779

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated samples were preserved with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994
DATE RECEIVED: August 5, 1994
ANALYSIS DATE: August 11, 1994

PROJECT CODE: GICG1233
REF.#: 62,773
STATION: MW #1
TIME SAMPLED: 13:08
SAMPLER: Don Tourangeau

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	1.2
MTBE	10	ND

Bromobenzene Surrogate Recovery: 102%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 6

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994
DATE RECEIVED: August 5, 1994
ANALYSIS DATE: August 12, 1994

PROJECT CODE: GICG1233
REF.#: 62,774
STATION: MW #2
TIME SAMPLED: 13:43
SAMPLER: Don Tourangeau

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	6.6
Chlorobenzene	1	ND[1]
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	3.1
Toluene	1	ND
Xylenes	1	27.6
MTBE	10	31.7

Bromobenzene Surrogate Recovery: 94%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:
1 None detected

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FAX 879-7103

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994
DATE RECEIVED: August 5, 1994
ANALYSIS DATE: August 12, 1994

PROJECT CODE: GICG1233
REF.#: 62,777
STATION: MW #3
TIME SAMPLED: 14:35
SAMPLER: Don Tourangeau

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	

Bromobenzene Surrogate Recovery: 98%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994
DATE RECEIVED: August 5, 1994
ANALYSIS DATE: August 12, 1994

PROJECT CODE: GICG1233
REF.#: 62,775
STATION: MW #4
TIME SAMPLED: 14:20
SAMPLER: Don Tourangeau

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	1.3
Chlorobenzene	1	ND[1]
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	4.1
Toluene	1	TBQ[2]
Xylenes	1	10.8
MTBE	10	TBQ

Bromobenzene Surrogate Recovery: 93%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:

1 None detected

2 Trace below quantitation limit

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994
DATE RECEIVED: August 5, 1994
ANALYSIS DATE: August 12, 1994

PROJECT CODE: GICG1233
REF.#: 62,779
STATION: Supply Well Garage
TIME SAMPLED: 14:47
SAMPLER: Don Tourangeau

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	123.

Bromobenzene Surrogate Recovery: 95%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994
DATE RECEIVED: August 5, 1994
ANALYSIS DATE: August 11, 1994

PROJECT CODE: GICG1233
REF.#: 62,772
STATION: Trip Blank
TIME SAMPLED: 10:04
SAMPLER: Don Tourangeau

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 101%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994
DATE RECEIVED: August 5, 1994
ANALYSIS DATE: August 12, 1994

PROJECT CODE: GICG1233
REF.#: 62,776
STATION: Duplicate
TIME SAMPLED: 14:20
SAMPLER: Don Tourangeau

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	1.4
Chlorobenzene	1	ND[1]
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	4.8
Toluene	1	TBQ[2]
Xylenes	1	12.1
MTBE	10	TBQ

Bromobenzene Surrogate Recovery: 100%

NUMBER OF UNIDENTIFIED PEAKS FOUND: >10

NOTES:
1 None detected
2 Trace below quantitation limit

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994
DATE RECEIVED: August 5, 1994
ANALYSIS DATE: August 12, 1994

PROJECT CODE: GICG1233
REF.#: 62,778
STATION: Equipment Blank
TIME SAMPLED: 14:40
SAMPLER: Don Tourangeau

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 110%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

ENDYNE, INC.

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EPA METHOD 602 LABORATORY REPORT

MATRIX SPIKE AND DUPLICATE LABORATORY CONTROL DATA

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994
DATE RECEIVED: August 5, 1994
ANALYSIS DATE: August 11, 1994

PROJECT CODE: GICG1233
REF.#: 62,773
STATION: MW #1
TIME SAMPLED: 13:08
SAMPLER: Don Tourangeau

Parameter	Sample(ug/L)	Spike(ug/L)	Dup1(ug/L)	Dup2(ug/L)	Avg % Rec
Benzene	ND[1]	10	10.5	11.1	108%
Toluene	ND	10	9.9	9.9	99%
Ethylbenzene	ND	10	10.0	9.9	99%
Xylenes	1.2	30	31.8	33.3	105%

NOTES:
1 None detected

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EPA METHOD 602 LABORATORY REPORT

MATRIX SPIKE AND DUPLICATE LABORATORY CONTROL DATA

CLIENT: Griffin International
PROJECT NAME: Craftsbury Garage
REPORT DATE: August 15, 1994
DATE SAMPLED: August 4, 1994
DATE RECEIVED: August 5, 1994
ANALYSIS DATE: August 12, 1994

PROJECT CODE: GICG1233
REF.#: 62,774
STATION: MW #2
TIME SAMPLED: 13:43
SAMPLER: Don Tourangeau

Parameter	Sample(ug/L)	Spike(ug/L)	Dup1(ug/L)	Dup2(ug/L)	Avg % Rec
Benzene	6.6	10	17.6	17.8	110%
Toluene	ND[1]	10	10.2	10.0	101%
Ethylbenzene	3.1	10	13.2	12.9	100%
Xylenes	27.6	30	59.1	57.6	102%

NOTES:
1 None detected

ENDYNE, INC.

32 James Brown Drive
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#6044541

CHAIN-OF-CUSTODY RECORD

10973

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Project Name: [illegible] Site Location: [illegible]	Reporting Address: [illegible]	Billing Address: [illegible]
Endyne Project Number: [illegible]	Company: Contact Name/Phone #: [illegible]	Sampler Name: [illegible] Phone #:

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
6d 772	TRIP BLANK	H_2O	✓		10:04	2	40ml C				
6d 773	MW #1				12:08						
6d 774	MW #2				13:13						
6d 775	MW #4				14:26						
6d 776	DUPLICATE				14:20						
6d 777	MW #3				14:55						
6d 778	EQUIPMENT BLANK				14:40						
6d 779	SUPPLY WELL - GARAGE				14:47						

Relinquished by: Signature [illegible]	Received by: Signature Laura M. Chambers	Date/Time 8/5/94 10:30am
Relinquished by: Signature	Received by: Signature	Date/Time

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										

ENDYNE, INC.

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

CHAIN-OF-CUSTODY RECORD

10973

Project Name:	Reporting Address:	Billing Address:
Site Location:		
Endyne Project Number:	Company:	Sampler Name:
	Contact Name/Phone #:	Phone #:

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush

Relinquished by: Signature	Received by: Signature	Date/Time
Relinquished by: Signature	Received by: Signature	Date/Time

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										

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